

## A New Sub-species of *Boloria polaris* from Canada (Lepidoptera: Nymphalidae)

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*Boloria polaris* (Boisduval) is usually quite rare in collections, but is a widespread circumpolar species of the high arctic. It does not occur south of 68°N in Europe (Higgins & Riley, 1970), but in North America occurs as far south as 56°N (The Belcher Island Group in Hudson Bay). Most collections containing the species have a fairly large series from one locality, but seldom have representation from numerous localities. This has probably obscured the geographic variation that occurs in the species and, surprisingly, for a species with such a wide range only three names have been proposed. In addition to the nominate subspecies from North Cape Norway, these include ssp. *gronlandica* (Skinner) from the west coast of Greenland and ssp. *americana* (Strand) from Jones Sound, Ellesmere Island.

I recently had the opportunity to examine intensively the drawers of *Boloria polaris* in the American Museum of Natural History in New York City. Although this collection lacks Asiatic material, it is undoubtedly the most complete collection of this insect in the United States. Geographic variation appears to be discrete and three primary populations are discernable, one of them unnamed. The unnamed population seems to have its centre of distribution on the west coast of Hudson Bay in Canada and is described below:

### *Boloria Polaris Stellata* Masters, new subspecies

Male (Fig. A and B). —The same general appearance associated with all population of *Boloria polaris* but somewhat smaller and with a darker-redder ground colour and with a distinctly different appearance to the ventral hindwing. The expanse of one forewing (base to apex) is 15 to 17 mm (average 16 mm).

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#### LEGEND OF FIGURES

Plate IX. males: A. *Boloria polaris stellata* new subspecies, holotype male, Churchill, Manitoba, 30 July 1933, A. V. Harper; B. underside of A; C. *B. polaris polaris* (Boisduval), male, Eagle Summit, mile 109 Steese Highway, Alaska, 20 June 1955, P. Ehrlich; D. underside of C; E. *B. polaris polaris*, male, Maalselvin, Lapland, Norway, 23 June 1937, P. Haig Thomas; F. underside of E. Females: G. *Boloria polaris stellata* new subspecies, allotype female, Churchill, Manitoba, 4 July 1947, T. N. Freeman; H. underside of G; J. *B. polaris polaris* (Boisduval), female, Toklat River, Mt. McKinley National Park, Alaska, 1 July 1955, P. Ehrlich; K. underside of J.; L. *B. polaris polaris*, female, Finland (no other data); M. underside of L. All figures are natural size. Specimens figured are in the American Museum of Natural History, New York City.

Upperside (Fig. A): A marginal row of spots, at the vein terminuses, are greatly enlarged, quite rounded and touch the submarginal row of both wings. Heavy dark scaling on hindwing from anal margin thru basal area almost completely occludes cell. Long androconial "hairs" cover this basal area.

Underside (Fig. B): A somewhat orange ground colour to the forewing and a deep chestnut brown on the hindwings. White markings on hindwing with sharply distinct shape and with no apparent median or submedian band composed of whitish scales. Rows of submarginal and postmedian spots on forewing of approximately equal size.

Female (Fig. G and H).—The same appearance as the male, except having a more ashen (less reddish) ground colour and a slightly larger size. The expanse of one forewing (base to apex) is 16 to 22 mm (average 19).

Upperside (Fig. G): Appearance of male but lacking, of course, the androconial scales.

Underside (Fig. H): Appearance of male. White markings in basal area of hindwing are not as discrete as in the male; these combine with a band of lighter scales to provide a faintly discernable white band in the median area.

Holotype male.—Churchill, Manitoba, 30 July 1933, A. V. Harper, collector. Expanse of forewing 16 mm. In collection of the American Museum of Natural History, New York City.

Allotype female.—Churchill, Manitoba, 4 July 1947, T. N. Freeman, collector. Expanse of forewing 19.5 mm. In collection of the American Museum of Natural History, New York City.

Paratopotypes. — 38 males and 28 females, American Museum of Natural History, N.Y.C.; 4 males and 4 females Manitoba Museum of Man and Nature, Winnipeg, Manitoba; 4 males and 2 females, author's collection, Hudson, Wisconsin and 7 males, 6 females, collection of Patrick J. Conway, Chicago, Illinois.

Other localities — Paratypes were restricted to specimens from the type locality. Other populations that I consider belonging to this subspecies include specimens from the following localities: District of Franklin, N.W.T., Canada: Belcher Islands (Hudson Bay), Flaherty Island (Hudson Bay), Southampton Island; District of Keewatin, N.W.T., Canada; Eskimo Point, Chesterfield Inlet, Baker Island; District of Mackenzie, N.W.T., Canada: Coppermine.

Brief descriptions of the three subspecies of *Boloria polaris* follow:

*Boloria polaris polaris*. Arctic Europe north of 68°N, presumably all of arctic Asia and extreme northwest North America including Alaska, Yukon, portions of the District of Mackenzie and British Columbia south to Atlin and Summit Lake. These are large lightly coloured populations. Expanse of male forewings (apex to base) 19 to 24 mm for Alaskan males and 18 to 22 mm for Norwegian males; 20 to 24 mm for Alaskan females and 20 to 23 mm for Norwegian females.

Males and females with marginal row of spots (dorsal surfaces) smaller and only rarely (Alaskan females) touching the submarginal row on the forewings. Ventral hindwings with a very distinct whitish submedian band. Basal ground colour of ventral hindwings not a deep chestnut brown, as in ssp. *stellata*. There are a number of minor distinctions between European and American examples of this subspecies. It would be, however, impossible to describe the Alaskan population as a distinct subspecies without examination of Asian populations.

*Boloria polaris stellata*. Arctic North America west of Hudson Bay (including many islands in the Bay) and west to Coppermine (District of Mackenzie) on the fringe of the Arctic Ocean. The males of *stellata* are distinguishable from any other population by the chestnut brown background colour on the ventral hindwings and the lack of a discernable median or submedian white band.

*Boloria polaris gronlandica* (= *B. polaris americana*). Greenland, Ellesmere Island, Baffin Island and, probably, the northern portions of Labrador and Quebec. A small dark subspecies, males having forewing length of 15 to 18 mm and females 17 to 22 mm. Upperside much like *stellata* but slightly darker and with ground colour having a more yellowish cast. Undersides are more like *stellata* than nominate *polaris* but a submedian white band is usually discernable in both sexes and the basal ground colour of the hindwings does not have the rich chestnut red hue of *stellata*.

*Boloria polaris stellata* is biennial in the type locality and has recorded here only in odd-numbered years (e.g. 1933, 37, 39, 41, 43, 47, 51, 61, 63 and 67). Quite likely the species will turn out to be biennial in other localities as well.

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#### REFERENCES

- Higgins, L. G. and N. D. Riley, 1970. A field guide to the butterflies of Britain and Europe. Collins, London. 380 pp.

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CORRECTION: It is regretted that the pagination of the May issue (85-112) has been repeated from the April issue. The May pages should be altered to 117-144, and these pages will be indexed by these revised numbers.—Ed.